NGSS Unit Planning with UbD

Teacher Name: 2nd Grade Team **Date:** November 30, 2015

School Site: E. Hale Curran **Unit:** Growing a Garden –Lesson 2

Note: 2nd lesson in the Plant Unit (Defined STEM) for 2nd grade- Making a drawing. This lesson should take about 7 to 9 days.

NGSS Covered:

PHYSICAL SCIENCE
- Matter and its Interactions - Students who demonstrate understanding can:

Science and Engineering Practices

Planning and Carrying Out Investigations - Planning and carrying out investigations to answer questions or test solutions to problems in K - 2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.

(2-PS1.SEP.1.1.) Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1)

Crosscutting Concepts
- Cause and Effect

(2-PS1.CC.2.2.) Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2)
- Structure and Function

(2-LS2.CC.2.1.) The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)

CCSS ELA Covered:

Writing Standards
- Research to Build and Present Knowledge

(W.2.8.) Recall information from experiences or gather information from provided sources to answer a question.

CCSS Mathematics Covered:

California Content Standards -- Mathematics

Grade 2

- Mathematical Practices
  - (MP.1.) Make sense of problems and persevere in solving them.
  - (MP.4.) Model with mathematics.
  - (MP.5.) Use appropriate tools strategically.
- Operations and Algebraic Thinking
  - Work with equal groups of objects to gain foundations for multiplication.
    - (2.OA.4.) Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
- Measurement and Data
  - Measure and estimate lengths in standard units.
    - (2.MD.1.) Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
    - (2.MD.3.) Estimate lengths using units of inches, feet, centimeters, and meters.
  - Represent and interpret data.
    - (2.MD.9.) Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
- Geometry
  - Reason with shapes and their attributes.
    - (2.G.1.) Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

(2.G.2.) Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Understanding by Design NGSS Unit Plan

Stage 1: Desired Results

Understand	Essential Question(s)
• Living things depend on their habitat to meet their basic needs. Nutrition and eating habits impact a person's overall health and well-being.	When you plant vegetable garden, does it make a difference where the vegetables are planted within the garden? Why is it important to plant vegetables?

Stage 2: Evidence/Assess

Know	Do
Vegetables are an important source of many nutrients. These nutrients can help people be healthy. Some of the nutrients found in vegetables include Vitamin A, Vitamin C, fiber, and potassium. To create a garden you will need to think about the environment where you live. You will also need to think about the vegetables that you want to grow. Can the vegetables you pick grow in the same garden?	Create a drawing that includes the length and width of your garden. Include the placement of the vegetables that you want to grow in the garden. Be sure you think about the required length that needs to be between the vegetables in order for them to have room to grow. You will want to use your math skills to figure out how many plants can fit in each row as well as how many rows you have room for in your garden space.

Stage 3: Learning Plan

How:

Engage: (one day) Show the video on Defined STEM on creating a garden. Tell students they will work with partners to create a drawing (plan) showing what vegetables they want to grow and where in their garden. Have partners write the essential questions in their notebooks and discuss each one. They should write down what they discussed. They will come back to their discussions later.

Explore: (two to three days) Students will research vegetable gardens, seeds to plant, and what would be good to plant in the Spring. They will start to come up with their plan. They will need some mini lessons on length, width, measuring, and perimeter. They can pick things in the classroom to measure (length and width) and record. Explain the reason they are learning this is so they can accurately draw their garden, which will be their model for their real garden.

Explain: (two days) Students will work with their partner, using their research, and draw their garden. They should take care to make sure their measurements are accurate and they have allowed enough room in between their plants for adequate growth. They should label all parts of their garden including their vegetables.
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Elaborate: (one to two days) Students will share their garden design with one other set of partners. They will get feedback from the other set of partners to use to make changes to their drawing. Partners can check each other's research.
Allow enough time for partners to work with the other set of partners as well as time for making changes to their drawing.

Evaluate: (one day) When all drawings are done have all designs hanging on the wall around the room. Attach a small paper next to each one. Have all partners walk around and write comments on the paper next to each drawing. Comments can be positive, constructive feedback, and questions. Let partners review comments and make changes if they want. They should also revisit the essential questions and their notes and make revisions to their notes. A class discussion on the essential questions may be very beneficial at this stage.

Stage 4: Transfer

Knowledge Transfer

Students are using the crosscutting concepts of patterns, cause and effect, and structure and function to help plan and design a vegetable garden. Using measurements of length and width and knowledge of perimeter allows students to apply various skills to this task as well as other tasks that will come up when constructing the actual garden.